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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,138	04/10/2001	Mark S. Peercy	062986.0160	8509

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EXAMINER
NGUYEN, KIMBINH T

ART UNIT	PAPER NUMBER
2671	

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DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,138	PEERCY ET AL.	
	Examiner	Art Unit	
	Kimbinh T. Nguyen	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This action is responsive to amendment filed 10/16/03.

2. Claims 1-20 are pending in the application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 4-6, 8, 9, 12-17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (5,777,621) in view of Baldwin (5,798,770).

Claims 1 and 14, Schneider et al. discloses providing a higher-level appearance description of geometry in a retained-mode representation (col. 2, lines 27-30); wherein the higher level appearance description (a model is represented in Escher as a hierarchy of objects which describe a geometry (shape), a material attribute (describing the appearance of a surface; col. 8, lines 21-29) is created using a first appearance description (a quality group object is created by the Escher system according to a predefined data structure, col. 8, lines 2-7); traversing the retained-mode representation (a model hierarchy is traversed from top to bottom, left to right, col. 18, lines 25-37) to provide a final representation; Schneider does not teach rendering the final representation by a graphics pipeline; however, Baldwin teaches that can be rendered

by a graphics pipeline (abstract; col. 4, lines 51-54); performing the graphics system interface under the OPENGL®; wherein the OPENGL® graphics system interface is a graphics system interface capable of operating with graphic pipeline (abstract; col. 4, lines 51-54; col. 60, lines 2-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a graphics pipeline, OPENGL® taught by Baldwin's method into the graphics rendering system of Schneider for utilizing graphics pipeline which can be compatible with OPENGL® to perform rendering, because it would provide an optimized throughput by only performing processor-intensive operations on pixels which will actually be displayed (col. 4, lines 54-56).

Claims 2, 4-6, 9, 12, 16, 19 and 20, Schneider et al. discloses the retained-mode representation is a scene graph (col. 2, lines 8-12, lines 27-32; col. 4, lines 11-12); drawing the scene from the final representation (col. 5, lines 14-16); automatically selecting appearance detail (collecting in one place a number of quality control criteria such as line style, type of shaders, type of illumination, level of detail, antialiasing level, and so on, col. 8, lines 4-7) from the retained-mode representation (col. 8, lines 46-51); defining a parametric surface from the higher-level appearance and retaining geometry parameters for parametric surface (immediate mode takes data structures such as a polygon data structure as parameters, whereas retained-mode takes objects such as an EtGeometryObject as parameters (col. 28, lines 64-67); determining quality type parameters: compute reflections, compute shadows for rendering surface) (table II; col. 42, lines 9-24; col. 46, line 57 through col. 47, line 21; fig. 16).

Claims 8 and 15, the rationale provide in the rejection of claim 1 is incorporated here in. In addition, Schneider teaches a graphics processor (fig. 1, # 110), a storage medium (col. 71, line 35).

Claims 13, 17, Schneider et al. discloses the higher-level appearance is operable to select geometry parameters to a level of detail (by creating a quality collection objects to maintain each effected quality collection in sorted order and to handle duplicate quality indices in the same quality collection, col. 44, lines 45-55) that minimizes hardware source consumption (col. 2, lines 17-30).

5. Claims 3, 7, 10, 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (5,777,621) in view of Baldwin (5,798,770) and further in view of Peercy et al. "Interactive Multi-Pass Programmable Shading" (ACM 2000).

Claims 3, 7, 10, 11, 18, Schneider does not teach traversing the another retained-mode; however, Peercy et al. discloses traversing the retained-mode to provide another retained-mode (another Cosmo3D scene graph) and traversing the another retained-mode to provide the final representation of the scene (a drawaction applied to this second scene graph renders the final image) (section 2.4, page 428); the final representation (a final color or a final solution in multiple passes) based on the group consisting of performance characteristics of the graphics pipeline; the higher-level appearance consisting of a programmable shading; a reflective map; a bump map (see Abstract, Introduction and 1.1 Related work, pages 425-426). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

incorporate the Peercy's teaching into the Schneider's method for utilizing the graphics pipeline to produce final image, because utilizing the OPENGL rendering pipeline, it would support programmable shading in interactive visual computing into multiple passes through graphics hardware (Introduction, page 425).

Response to Arguments

6. With respect to applicant's arguments, the rejection of claims 1 and 14 has been modified. Claim 1, the Schneider reference shows all the claim limitations: providing a higher-level appearance description of geometry in a retained-mode representation (col. 2, lines 27-30); wherein the higher level appearance description (a model is represented in Escher as a hierarchy of objects which describe a geometry (shape), a material attribute (describing the appearance of a surface; col. 8, lines 21-29) is created using a first appearance description (a quality group object is created by the Escher system according to a predefined data structure, col. 8, lines 2-7); traversing the retained-mode representation (a model hierarchy is traversed from top to bottom, left to right, col. 18, lines 25-37) to provide a final representation; Schneider does not teach rendering the final representation by a graphics pipeline; however, Baldwin teaches that can be rendered by a graphics pipeline (abstract); claim 14, Baldwin teaches performing the graphics system interface under the OPENGL®; wherein the OPENGL® graphics system interface is a graphics system interface capable of operating with graphic pipeline (abstract; col. 4, lines 51-54; col. 60, lines 2-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a graphics pipeline, OPENGL® taught by Baldwin's method into the graphics rendering

system of Schneider for utilizing graphics pipeline which can be compatible with OPENGL® to perform rendering, because it would provide an optimized throughput by only performing processor-intensive operations on pixels which will actually be displayed (col. 4, lines 54-56). It means the scene is rendered using the new appearance description, unneeded pixel data is discarded or eliminated before performing texturing calculations.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kimbinh Nguyen** whose telephone number is **(703)**

305-9683. The examiner can normally be reached **(Monday- Thursday from 7:00 AM to 4:30 PM and alternate Fridays from 7:00 AM to 3:30 PM)**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Part II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Kimbinh Nguyen

December 30, 2003

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600